



Sequence Listing

<110> Pharm. Co., Ltd.

<120> Modified human granulocyte-colony stimulating factor and process for producing same

<130> PCA00729/HMY

<160> 71

<170> KOPATIN 1.0

<210> 1

<211> 522

<212> DNA

<213> *Homo sapiens*

<220>

<221> CDS

<222> (1)..(522)

<400> 1

aca ccc ctg ggc cct gcc agc tcc ctg ccc cag agc ttc ctg ctc aag 48
Thr Pro Leu Gly Pro Ala Ser Ser Leu Pro Gln Ser Phe Leu Leu Lys
1 5 10 15

tgc tta gag caa gtg agg aag atc cag ggc gat ggc gca gcg ctc cag 96
Cys Leu Glu Gln Val Arg Lys Ile Gln Gly Asp Gly Ala Ala Leu Gln
20 25 30

gag aag ctg tgt gcc acc tac aag ctg tgc cac ccc gag gag ctg gtg 144
Glu Lys Leu Cys Ala Thr Tyr Lys Leu Cys His Pro Glu Glu Leu Val
35 40 45

ctg ctc gga cac tct ctg ggc atc ccc tgg gct ccc ctg agc tcc tgc 192
Leu Leu Gly His Ser Leu Gly Ile Pro Trp Ala Pro Leu Ser Ser Cys
50 55 60

ccc agc cag gcc ctg cag ctg gca ggc tgc ttg agc caa ctc cat agc 240
Pro Ser Gln Ala Leu Gln Leu Ala Gly Cys Leu Ser Gln Leu His Ser
65 70 75 80

ggc ctt ttc ctc tac cag ggg ctc ctg cag gcc ctg gaa ggg ata tcc 288
Gly Leu Phe Leu Tyr Gln Gly Leu Leu Gln Ala Leu Glu Gly Ile Ser

85

90

95

ccc gag ttg ggt ccc acc ttg gac aca ctg cag ctg gac gtc gcc gac 336
 Pro Glu Leu Gly Pro Thr Leu Asp Thr Leu Gln Leu Asp Val Ala Asp
 100 105 110

ttt gcc acc acc atc tgg cag cag atg gaa gaa ctg gga atg gcc cct 384
 Phe Ala Thr Thr Ile Trp Gln Gln Met Glu Glu Leu Gly Met Ala Pro
 115 120 125

gcc ctg cag ccc acc cag ggt gcc atg ccg gcc ttc gcc tct gct ttc 432
 Ala Leu Gln Pro Thr Gln Gly Ala Met Pro Ala Phe Ala Ser Ala Phe
 130 135 140

cag cgc cgg gca gga ggg gtc ctg gtt gct agc cat ctg cag agc ttc 480
 Gln Arg Arg Ala Gly Gly Val Leu Val Ala Ser His Leu Gln Ser Phe
 145 150 155 160

ctg gag gtg tcg tac cgc gtt cta cgc cac ctt gcg cag ccc 522
 Leu Glu Val Ser Tyr Arg Val Leu Arg His Leu Ala Gln Pro
 165 170

<210> 2

<211> 174

<212> PRT

<213> *Homo sapiens*

<400> 2

Thr Pro Leu Gly Pro Ala Ser Ser Leu Pro Gln Ser Phe Leu Leu Lys
 1 5 10 15

Cys Leu Glu Gln Val Arg Lys Ile Gln Gly Asp Gly Ala Ala Leu Gln
 20 25 30

Glu Lys Leu Cys Ala Thr Tyr Lys Leu Cys His Pro Glu Glu Leu Val
 35 40 45

Leu Leu Gly His Ser Leu Gly Ile Pro Trp Ala Pro Leu Ser Ser Cys
 50 55 60

Pro Ser Gln Ala Leu Gln Leu Ala Gly Cys Leu Ser Gln Leu His Ser
 65 70 75 80

Gly Leu Phe Leu Tyr Gln Gly Leu Leu Gln Ala Leu Glu Gly Ile Ser

3

85

90

95

Pro Glu Leu Gly Pro Thr Leu Asp Thr Leu Gln Leu Asp Val Ala Asp
100 105 110

Phe Ala Thr Thr Ile Trp Gln Gln Met Glu Glu Leu Gly Met Ala Pro
115 120 125

Ala Leu Gln Pro Thr Gln Gly Ala Met Pro Ala Phe Ala Ser Ala Phe
130 135 140

Gln Arg Arg Ala Gly Gly Val Leu Val Ala Ser His Leu Gln Ser Phe
145 150 155 160

Leu Glu Val Ser Tyr Arg Val Leu Arg His Leu Ala Gln Pro
165 170

<210> 3

<211> 32

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide primer for the N-terminal of hG-CSF

<400> 3

cgccgccata tgacaccct gggccctgcc ag 32

<210> 4

<211> 36

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide primer for the C-terminal of hG-CSF

<400> 4

accgaattcg gacctcagg gctgcgcaag gtggcg 36

<210> 5

<211> 72

<212> DNA
 <213> Artificial Sequence

<220>

<223> Oligonucleotide for preparing *E. coli* enterotoxin II signal peptide

<400> 5

tcatgaaaaa gaatatcgca ttcttcttg catctatgtt cgtttttct attgctacaa 60

atgcctacgc gt

72

<210> 6

<211> 72

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide for preparing *E. coli* enterotoxin II signal peptide

<400> 6

acgcgtaggc attgtagca atagaaaaaa cgaacataga tgcaagaaga aatgcgatat 60

tcttttcat ga

72

<210> 7

<211> 39

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide primer coding for the N-terminal of [Ser1]hG-CSF

<400> 7

acaaatgcct acgcgtctcc cctgggccct gccagctcc

39

<210> 8

<211> 42

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide primer coding for the C-terminal of [Ser1]hG-CSF

<400> 8

accgaattcg gacctcagg gctgcgcaag gtggcgtaga ac 42

<210> 9

<211> 65

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide primer coding for *E.coli* enterotoxin II Shine-Dalgarno sequence

<400> 9

cggtttcct ctagagggtg aggtgttta tgaaaaagaa tategcattt cttcttgcac 60

ctatg

65

<210> 10

<211> 45

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide containing BamHI restriction site

<400> 10

accgaattcg gacctcagg gctgcgcaag gtggcgtaga acgcg 45

<210> 11

<211> 10

<212> PRT

<213> Artificial Sequence

<220>

<223> Last five amino acids of *E. coli* enterotoxin II signal peptide plus the 1st to the 5th amino acids of hG-CSF

<400> 11

Thr Asn Ala Tyr Ala Thr Pro Leu Gly Pro

1

5

10

<210> 12
 <211> 30
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Oligonucleotide for preparing [Thr1]hG-CSF

<400> 12
 acaaatgcct acgcgacacc cctgggcct 30

<210> 13
 <211> 30
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Antisense of SEQ ID NO: 12
 <400> 13
 agggcccagg ggtgtcgcgt aggcattgt 30

<210> 14
 <211> 8
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> N-terminal sequence of *E. coli* enterotoxin II signal peptide having threonine as the 4th amino acid

<400> 14
 Met Lys Lys Thr Ile Ala Phe Leu
 1 5

<210> 15
 <211> 33
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Oligonucleotide for substituting the 4th amino acid of *E. coli* enterotoxin II

signal peptide with threonine

<400> 15

ggtgttttat gaaaaagaca atgcatttc ttc

33

<210> 16

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense of SEQ ID No: 15

<400> 16

gaagaaatgc gattgtctt ttcataaac acc

33

<210> 17

<211> 8

<212> PRT

<213> Artificial Sequence

<220>

<223> C-terminal sequence of *E. coli* enterotoxin II signal peptide having glutamine as the 22nd amino acid

<400> 17

Asn Ala Gln Ala Thr Pro Leu Gly

1

5

<210> 18

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide for substituting the 22nd amino acid of *E. coli* enterotoxin II signal peptide with glutamine

<400> 18

caaatgccca agcgacaccc ctgggc

26

<210> 19
 <211> 26
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Antisense of SEQ ID NO: 18

<400> 19
 gccacaggggt gtcgcttggg catttg 26

<210> 20
 <211> 24
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Oligonucleotide for modifying *E. coli* enterotoxin II Shine-Dalgarno
 sequence

<400> 20
 tctagaggtt gaggtgtttt atga 24

<210> 21
 <211> 24
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Antisense of SEQ ID NO: 20

<400> 21
 tcataaaaca cctcaacctc taga 24

<210> 22
 <211> 66
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> S1 oligomer having *E. coli*-preferred nucleotide sequence coding for the 6th to
 26th amino acids of [Ser17]hG-CSF

<400> 22

cagcctcttc tcttcacaa tcttcttc ttaagtctct tgaacaagtt agaaagatcc 60

aaggcg

66

<210> 23

<211> 66

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense of SEQ ID NO: 22 (AS1 oligomer)

<400> 23

ccgggtcggga gaagagaagg tgtagaaag gaagaattca gagaacttgt tcaatcttcc 60

taggtt

66

<210> 24

<211> 21

<212> PRT

<213> *Escherichia coli*

<220>

<221> SIGNAL

<222> (1)..(21)

<223> *E. coli* OmpA signal peptide

<400> 24

Met Lys Lys Thr Ala Ile Ala Ile Ala Val Ala Leu Ala Gly Phe Ala

1

5

10

15

Thr Val Ala Gln Ala

20

<210> 25

<211> 18

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide containing Hind III recognition site

<400> 25
gttgcgcaag cttctcga 18

<210> 26
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Antisense of SEQ ID NO: 25

<400> 26
tcgagaagct tgcgcaac 18

<210> 27
<211> 39
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligonucleotide for the N-terminal of [Ser1] hG-CSF

<400> 27
gttgcgcaag cttctcccct gggccctgcc agtcacctg 39

<210> 28
<211> 39
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligonucleotide containing EcoRI restriction site

<400> 28
accgaattct cagggtgcg caaggtggcg tagaacgcg 39

<210> 29
<211> 13
<212> PRT
<213> Artificial Sequence

<220>

<223> *E. coli* OmpA signal peptide plus the 1st to the 5th amino acids of [Ser1]hG-CSF

<400> 29

Gly Phe Ala Thr Val Ala Gln Ala Ser Pro Leu Gly Pro

1 5 10

<210> 30

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide for preparing [Thr1]hG-CSF

<400> 30

accgttgcgc aagctacacc cctgggcct 30

<210> 31

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense of SEQ ID NO: 30

<400> 31

agggcccagg ggtgtagctt gcgcaacggt 30

<210> 32

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide for preparing [Ser17]hG-CSF

<400> 32

agcttcctgc tcaagtcttt agagcaagtg agg 33

<210> 33
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Antisense of SEQ ID NO: 32

<400> 33
cctcacttgc tctaaagact tgagcaggaa gct 33

<210> 34
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligonucleotide for preparing [Thr17]hG-CSF

<400> 34
agcttctgc tcaagacctt agagcaagtg agg 33

<210> 35
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Antisense of SEQ ID NO: 34

<400> 35
cctcacttgc tctaaggtct tgagcaggaa gct 33

<210> 36
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligonucleotide for preparing [Ala17]hG-CSF

<400> 36
agcttcctgc tcaaggcctt agagcaagtg agg 33

<210> 37
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Antisense of SEQ ID NO: 36

<400> 37
cctcacttgc tctaaggcct tgagcaggaa gct 33

<210> 38
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligonucleotide for preparing [Gly17]hG-CSF

<400> 38
agcttcctgc tcaaggcctt agagcaagtg agg 33

<210> 39
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Antisense of SEQ ID NO: 38

<400> 39
cctcacttgc tctaaggcct tgagcaggaa gct 33

<210> 40
<211> 33
<212> DNA
<213> Artificial Sequence

<220>

<223> Oligonucleotide for preparing [Asp17]hG-CSF

<400> 40

agcttcctgc tcaaggactt agagcaagtg agg 33

<210> 41

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense of SEQ ID NO: 40

<400> 41

cctcacttgc tctaagtct tgagcaggaa gct 33

<210> 42

<211> 18

<212> PRT

<213> *Escherichia coli*

<220>

<221> SIGNAL

<222> (1)..(18)

<223> *E. coli* Gene III signal peptide

<400> 42

Met Lys Lys Leu Leu Phe Ala Ile Pro Leu Val Val Pro Phe Tyr Ser

1

5

10

15

His Ser

<210> 43

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide containing Nco I restriction site

<400> 43

tatagccata gcaccatgga g 21

<210> 44
 <211> 21
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Antisense of SEQ ID NO: 43

<400> 44
 ctccatgggtg ctatggctat a 21

<210> 45
 <211> 8
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> The 2nd to the 10th amino acids of hG-CSF

<400> 45
 Pro Leu Gly Pro Ala Ser Ser Leu
 1 5

<210> 46
 <211> 25
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Oligonucleotide primer coding for the 2nd to the 10th amino acids of hG-CSF
 plus an additional cytosine at its 5'-end

<400> 46
 ccccctgggc cctgccagct ccctg 25

<210> 47
 <211> 25
 <212> DNA
 <213> Artificial Sequence

<220>

<223> Antisense of SEQ ID NO: 46

<400> 47

cagggagctg gcagggccca ggggg

25

<210> 48

<211> 10

<212> PRT

<213> Artificial Sequence

<220>

<223> *E. coli* Gene III signal peptide plus the 1st to the 5th amino acids of hG-CSF

<400> 48

Phe Tyr Ser His Ser Thr Pro Leu Gly Pro

1

5

10

<210> 49

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> The 1st to the 9th amino acids of [Met2,Val3]hG-CSF

<400> 49

Thr Met Val Gly Pro Ala Ser Ser Leu

1

5

<210> 50

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide for preparing [Met2,Val3]hG-CSF

<400> 50

tacgcgtcca tgggtggccc tgccagctcc ctg

33

<210> 51
 <211> 33
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Antisense of SEQ ID NO: 50

<400> 51
 cagggagctg gcagggccca ccatggacgc gta 33

<210> 52
 <211> 10
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> *E. coli* Gene III signal peptide plus the 1st to the 5th amino acids of
 [Met2,Val3]hG-CSF

<400> 52
 Phe Tyr Ser His Ser Thr Met Val Gly Pro
 1 5 10

<210> 53
 <211> 23
 <212> PRT
 <213> *Escherichia coli*

<220>
 <221> SIGNAL
 <222> (1)..(23)
 <223> Thermoresistant *E. coli* enterotoxin II signal peptide

<400> 53
 Met Lys Lys Asn Ile Ala Phe Leu Leu Ala Ser Met Phe Val Phe Ser
 1 5 10 15

Ile Ala Thr Asn Ala Tyr Ala
 20

<210> 54
 <211> 23
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Modified thermoresistant *E. coli* enterotoxin II signal
 peptide

<400> 54
 Met Lys Lys Thr Ile Ala Phe Leu Leu Ala Ser Met Phe Val Phe Ser
 1 5 10 15

Ile Ala Thr Asn Ala Gln Ala
 20

<210> 55
 <211> 96
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Nucleotide sequence coding for the 1st to 32nd amino acids of [Ser1,
 Ser17]hG-CSF

<220>
 <221> CDS
 <222> (1)..(96)

<400> 55
 tct ccc ctg ggc cct gcc agc tcc ctg ccc cag agc ttc ctg ctc aag 48
 Ser Pro Leu Gly Pro Ala Ser Ser Leu Pro Gln Ser Phe Leu Leu Lys
 1 5 10 15

tct tta gag caa gtg agg aag atc cag ggc gat ggc gca gcg ctc cag 96
 Ser Leu Glu Gln Val Arg Lys Ile Gln Gly Asp Gly Ala Ala Leu Gln
 20 25 30

<210> 56
 <211> 32
 <212> PRT
 <213> Artificial Sequence

<400> 56

Ser Pro Leu Gly Pro Ala Ser Ser Leu Pro Gln Ser Phe Leu Leu Lys
1 5 10 15

Ser Leu Glu Gln Val Arg Lys Ile Gln Gly Asp Gly Ala Ala Leu Gln
20 25 30

<210> 57

<211> 96

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence coding for the 1st to the 32nd amino acids of
[Ser1]hG-CSF

<220>

<221> CDS

<222> (1)..(96)

<400> 57

tct ccc ctg ggc cct gcc agc tcc ctg ccc cag agc ttc ctg ctc aag 48
Ser Pro Leu Gly Pro Ala Ser Ser Leu Pro Gln Ser Phe Leu Leu Lys
1 5 10 15

tgc tta gag caa gtg agg aag atc cag ggc gat ggc gca gcg ctc cag 96
Cys Leu Glu Gln Val Arg Lys Ile Gln Gly Asp Gly Ala Ala Leu Gln
20 25 30

<210> 58

<211> 32

<212> PRT

<213> Artificial Sequence

<400> 58

Ser Pro Leu Gly Pro Ala Ser Ser Leu Pro Gln Ser Phe Leu Leu Lys
1 5 10 15

Cys Leu Glu Gln Val Arg Lys Ile Gln Gly Asp Gly Ala Ala Leu Gln
20 25 30

<210> 59
 <211> 96
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Nucleotide sequence coding for the 1st to the 32nd amino acids of [Ser17]hG-CSF

<220>
 <221> CDS
 <222> (1)..(96)

<400> 59
 aca ccc ctg ggc cct gcc agc tcc ctg ccc cag agc ttc ctg ctc aag 48
 Thr Pro Leu Gly Pro Ala Ser Ser Leu Pro Gln Ser Phe Leu Leu Lys
 1 5 10 15

tct tta gag caa gtg agg aag atc cag ggc gat ggc gca gcg ctc cag 96
 Ser Leu Glu Gln Val Arg Lys Ile Gln Gly Asp Gly Ala Ala Leu Gln
 20 25 30

<210> 60
 <211> 32
 <212> PRT
 <213> Artificial Sequence

<400> 60
 Thr Pro Leu Gly Pro Ala Ser Ser Leu Pro Gln Ser Phe Leu Leu Lys
 1 5 10 15

Ser Leu Glu Gln Val Arg Lys Ile Gln Gly Asp Gly Ala Ala Leu Gln
 20 25 30

<210> 61
 <211> 96
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Nucleotide sequence coding for the 1st to the 32nd amino acids of [Thr17]hG--CSF

<220>

<221> CDS

<222> (1)..(96)

<400> 61

aca ccc ctg ggc cct gcc agc tcc ctg ccc cag agc ttc ctg ctc aag 48
 Thr Pro Leu Gly Pro Ala Ser Ser Leu Pro Gln Ser Phe Leu Leu Lys
 1 5 10 15

acc tta gag caa gtg agg aag atc cag ggc gat ggc gca gcg ctc cag 96
 Thr Leu Glu Gln Val Arg Lys Ile Gln Gly Asp Gly Ala Ala Leu Gln
 20 25 30

<210> 62

<211> 32

<212> PRT

<213> Artificial Sequence

<400> 62

Thr Pro Leu Gly Pro Ala Ser Ser Leu Pro Gln Ser Phe Leu Leu Lys
 1 5 10 15

Thr Leu Glu Gln Val Arg Lys Ile Gln Gly Asp Gly Ala Ala Leu Gln
 20 25 30

<210> 63

<211> 96

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence coding for the 1st to the 32nd amino acids of
 [Ala17]hG-CSF

<220>

<221> CDS

<222> (1)..(96)

<400> 63

aca ccc ctg ggc cct gcc agc tcc ctg ccc cag agc ttc ctg ctc aag 48
 Thr Pro Leu Gly Pro Ala Ser Ser Leu Pro Gln Ser Phe Leu Leu Lys
 1 5 10 15

gcc tta gag caa gtg agg aag atc cag ggc gat ggc gca gcg ctc cag 96
 Ala Leu Glu Gln Val Arg Lys Ile Gln Gly Asp Gly Ala Ala Leu Gln
 20 25 30

<210> 64
 <211> 32
 <212> PRT
 <213> Artificial Sequence

<400> 64
 Thr Pro Leu Gly Pro Ala Ser Ser Leu Pro Gln Ser Phe Leu Leu Lys
 1 5 10 15

Ala Leu Glu Gln Val Arg Lys Ile Gln Gly Asp Gly Ala Ala Leu Gln
 20 25 30

<210> 65
 <211> 96
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Nucleotide sequence coding for the 1st to the 32th amino acids of [Gly17]hG-CSF

<220>
 <221> CDS
 <222> (1)..(96)

<400> 65
 aca ccc ctg ggc cct gcc agc tcc ctg ccc cag agc ttc ctg ctc aag 48
 Thr Pro Leu Gly Pro Ala Ser Ser Leu Pro Gln Ser Phe Leu Leu Lys
 1 5 10 15

ggc tta gag caa gtg agg aag atc cag ggc gat ggc gca gcg ctc cag 96
 Gly Leu Glu Gln Val Arg Lys Ile Gln Gly Asp Gly Ala Ala Leu Gln
 20 25 30

<210> 66
 <211> 32
 <212> PRT
 <213> Artificial Sequence

<400> 66

Thr Pro Leu Gly Pro Ala Ser Ser Leu Pro Gln Ser Phe Leu Leu Lys
 1 5 10 15

Gly Leu Glu Gln Val Arg Lys Ile Gln Gly Asp Gly Ala Ala Leu Gln
 20 25 30

<210> 67

<211> 96

<212> DNA

<213> Artificial Sequence

<220>

<223> Nucleotide sequence coding for the 1st to the 32nd amino acids of [Met2, Val3]hG-CSF

<220>

<221> CDS

<222> (1)..(96)

<400> 67

aca atg gtc ggc cct gcc agc tcc ctg ccc cag agc ttc ctg ctc aag 48
 Thr Met Val Gly Pro Ala Ser Ser Leu Pro Gln Ser Phe Leu Leu Lys
 1 5 10 15

tgc tta gag caa gtg agg aag atc cag ggc gat ggc gca gcg ctc cag 96
 Cys Leu Glu Gln Val Arg Lys Ile Gln Gly Asp Gly Ala Ala Leu Gln
 20 25 30

<210> 68

<211> 32

<212> PRT

<213> Artificial Sequence

<400> 68

Thr Met Val Gly Pro Ala Ser Ser Leu Pro Gln Ser Phe Leu Leu Lys
 1 5 10 15

Cys Leu Glu Gln Val Arg Lys Ile Gln Gly Asp Gly Ala Ala Leu Gln
 20 25 30

<210> 69
 <211> 96
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Nucleotide sequence coding for the 1st to the 32nd amino acids of [Met2, Val3, Ser17]hG-CSF

<220>
 <221> CDS
 <222> (1)..(96)

<400> 69
 aca atg gtc ggc cct gcc agc tcc ctg ccc cag agc ttc ctg ctc aag 48
 Thr Met Val Gly Pro Ala Ser Ser Leu Pro Gln Ser Phe Leu Leu Lys
 1 5 10 15

tct tta gag caa gtg agg aag atc cag ggc gat ggc gca gcg ctc cag 96
 Ser Leu Glu Gln Val Arg Lys Ile Gln Gly Asp Gly Ala Ala Leu Gln
 20 25 30

<210> 70
 <211> 32
 <212> PRT
 <213> Artificial Sequence

<400> 70
 Thr Met Val Gly Pro Ala Ser Ser Leu Pro Gln Ser Phe Leu Leu Lys
 1 5 10 15

Ser Leu Glu Gln Val Arg Lys Ile Gln Gly Asp Gly Ala Ala Leu Gln
 20 25 30

<210> 71
 <211> 10
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Modified Shine-Dalgarno sequence

<400> 71

gaggtgttt

25

10